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Profile of Type 2 Diabetes Mellitus Patients and Its Implications for Health Promotion Strategies at Sanden Public Health Centre (2022-2024)

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Abstract: Type 2 Diabetes Mellitus (T2DM) remains a significant public health challenge globally, particularly in low- and middle-income countries such as Indonesia. Understanding the sociodemographic and clinical profiles of diabetic patients is essential for designing targeted interventions and improving disease outcomes. This descriptive study aimed to analyze the characteristics of T2DM patients registered at the Sanden Primary Health Center, Bantul Regency, from 2022 to 2024. Data were collected from the chronic disease program (PROLANIS) register, encompassing patient identity, blood sugar levels, and clinical complications. Among 86 patients, 79.07% were female, and the most prevalent age group was 56–65 years (44.19%). Some patients experienced complications, including peripheral circulatory disorders (3.35%) and neurological complications (1.97%).

These findings underscore the need for strengthened patient education, lifestyle modification support, and routine clinical monitoring to manage T2DM effectively at the primary care level. Additionally, community-based health promotion strategies, utilizing simplified communication, culturally relevant content, and visual media, are urgently needed to reach vulnerable groups, especially elderly women with limited educational attainment.

Keywords: Type 2 Diabetes Mellitus, Patient Profile, Primary Health Care, PROLANIS, Indonesia, Health Promotion, Complications

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INTRODUCTION

Type 2 Diabetes Mellitus (T2DM) is one of the most prevalent chronic diseases worldwide, characterized by insulin resistance and progressive pancreatic β-cell dysfunction (1). Globally, the burden of diabetes is rapidly increasing, with the International Diabetes Federation (IDF) estimating over 500 million people affected as of 2021 (2). In Indonesia, T2DM has become a national health concern, ranking among the top ten causes of morbidity and mortality (3).

Primary health centers (*Puskesmas*) play a pivotal role in managing chronic diseases, including diabetes, through community-based approaches such as the Chronic Disease Management Program (PROLANIS). This program is designed to improve the quality of life of patients with chronic conditions by providing regular monitoring, health education, and promotion of healthy behaviors (4). However, implementation remains uneven across regions due to infrastructure disparities and human resource limitations.

Profiling diabetic patients at the *Puskesmas* level is crucial for tailoring public health interventions, allocating resources effectively, and guiding clinical decision-making. Early identification of sociodemographic and clinical patterns among T2DM patients is essential to prevent long-term complications such as neuropathy, nephropathy, and cardiovascular disease. Studies have shown that patients' age, education level, gender, and occupation are significant determinants of treatment adherence and self-management capacity in diabetes care (5,6). In resource-limited settings like Indonesia, where primary care remains the first point of contact for most chronic disease patients, understanding these contextual variables becomes even more critical to improving care outcomes.

Despite national initiatives to curb the impact of T2DM, challenges persist in the implementation of standardized care at the *Puskesmas* level. These include limited access to laboratory testing, shortages of trained personnel, and variations in patient engagement across regions. Moreover, cultural beliefs, health literacy, and economic constraints often hinder long-term disease control (7). Therefore, generating localized evidence, such as patient profiling data from specific *Puskesmas*, can serve as a foundation for targeted interventions and policy refinement within Indonesia's decentralized health system.

This study aims to describe the demographic and clinical profile of T2DM patients enrolled in the PROLANIS program at Sanden Primary Health Center in Bantul Regency between 2022 and 2024, and to explore their implications for targeted health promotion strategies in primary care.

METHOD

This study employed a descriptive quantitative design to examine the sociodemographic and clinical characteristics of Type 2 Diabetes Mellitus (T2DM) patients. Secondary data were retrieved from the PROLANIS (Chronic Disease Management Program) registry at Sanden Primary Health Center, Bantul Regency. The registry contains systematically recorded health data of patients enrolled in the program. A total of

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1,165 patients diagnosed with T2DM were included in the dataset.

The dataset included all patients diagnosed with T2DM and registered in the PROLANIS program between January 2022 and March 2024. Inclusion criteria comprised: (1) patients officially diagnosed with T2DM by a medical professional, (2) individuals enrolled in the PROLANIS program during the study period, and (3) patients with complete records in terms of demographic and clinical indicators. Patients with incomplete data or who were not actively participating in follow-up visits were excluded.

Variables analyzed in this study included: (1) Demographic data: age and sex (2) DM information (Type of DM and DM complication).

The data were collected by trained health workers and recorded electronically. Data quality was ensured through cross-verification with individual medical records by the research team.

All data were cleaned, categorized, and entered into Microsoft Excel 2010, then analyzed descriptively. Frequencies and percentages were used to present categorical variables, while numerical variables were grouped into clinically relevant intervals. The results are presented in tabular form to facilitate interpretation.

This study received ethical approval from the Research Ethics Committee of Universitas Ahmad Dahlan (KEP UAD) with approval number: 012409305.

RESULT

A total of 86 patients with T2DM were included in the analysis. Most patients were female (79.07%), with the predominant age group being 56–65 years (44.19%).

Table 1. Characteristics of Diabetes Mellitus Patients at Sanden Public Health Center

Variable	Category	Total	Percentage (%)
Gender	Male	405	35%
	Female	760	65%
Age	Adolescent (10-18 years)	4	0.35%
	Adult (19-59 years)	532	45,66%
	Elderly (>60 years)	629	53,99%

Table 2. Clinical Condition of Diabetes Mellitus (DM) Patients at Sanden Public Health Centre

Variable	Category	Number	Percentage (%)
Type of DM	DM Type 1 (T1DM)	139	11.93%
	DM Rype 2 (T2DM)	1022	87.72%
	Gestational DM (GDM)	4	0.35%
DM Complications	DM with multiple complications	17	1.46%
	DM with neurological complications	23	1.97%
	DM with ophthalmic complications	10	0.86%
	DM with other specified complications	39	3.35%
	DM with peripheral circulatory complications	39	3.35%

Based on table 2, the majority of diabetes mellitus (DM) patients are diagnosed with

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Type 2 DM, accounting for 87.72% of all cases. Type 1 DM represents 11.93%, while gestational DM (GDM) makes up only 0.35%. Regarding complications, the most common are peripheral circulatory complications and other specified complications, each at 3.35%. Neurological complications are also notable at 1.97%, followed by multiple complications (1.46%) and ophthalmic complications (0.86%). These findings highlight the high prevalence of Type 2 DM and the need for early management of complications, particularly those involving peripheral circulation and the nervous system

DISKUSI

Characteristics of Diabetes Mellitus Patients

This study offers a snapshot of the sociodemographic profile of individuals living with type 2 diabetes mellitus (T2DM), revealing key factors that may influence the onset, progression, and management of the disease. Understanding these factors is crucial for designing effective public health interventions.

The majority of participants were female (79.07%), which may reflect gender-related differences in health-seeking behavior and access to healthcare services. Recent research suggests that women, especially in certain cultural contexts, are more likely to utilize healthcare services and be diagnosed with chronic conditions such as T2DM (8). In addition, women often bear the burden of caregiving and domestic responsibilities, which may contribute to stress-related metabolic risk and limited time for physical activity or self-care.

The age group with the highest proportion of patients was 56–65 years (44.19%). T2DM is known to be strongly associated with aging, as age is a key factor in the decline of insulin sensitivity and beta-cell function (9). This highlights the need for age-targeted screening and intervention strategies, especially in populations approaching older adulthood.

Collectively, these findings suggest the importance of developing diabetes care models that are sensitive to gender and age. Health promotion strategies should prioritize simplified communication, community health education, and culturally adapted interventions to reach populations at risk, particularly older women.

Complication of Diabetes Mellitus (DM)

The findings from Table 2 confirm the global epidemiological pattern of diabetes mellitus (DM), with type 2 diabetes mellitus (T2DM) overwhelmingly representing the majority of diagnosed cases (87.72%). In contrast, type 1 diabetes mellitus (T1DM) accounts for 11.93%, and gestational diabetes mellitus (GDM) comprises only 0.35%. These proportions underscore the increasing burden of T2DM, which continues to rise in parallel with global trends in aging, urbanization, sedentary lifestyles, and unhealthy dietary habits (10–12).

The dominance of T2DM over T1DM is expected, as T2DM represents over 90% of diabetes cases worldwide and is strongly influenced by modifiable risk factors, including obesity, physical inactivity, and socioeconomic status (13,14). While T1DM is primarily autoimmune and often diagnosed at a younger age, its smaller

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proportion in the current sample is consistent with its lower prevalence in the general population. The very low rate of GDM (0.35%) may reflect underdiagnosis or underreporting, especially in settings where routine prenatal screening is not uniformly implemented.

Regarding diabetes-related complications, the most common were peripheral circulatory complications and other specified complications, each accounting for 3.35% of cases. Peripheral vascular complications are among the most severe and disabling consequences of prolonged hyperglycemia, leading to critical limb ischemia, ulcers, and in some cases, amputations. These complications are often a result of both macrovascular disease and diabetic neuropathy (15,16). Their prominence in the study sample emphasizes the urgent need for improved foot care programs, vascular screening, and patient education to prevent disease progression.

Neurological complications, present in 1.97% of patients, are also significant. Diabetic neuropathy is a common and progressive condition, resulting in pain, sensory loss, and increased risk of foot injuries and infections. These outcomes not only impair quality of life but also increase healthcare costs due to the need for long-term care and hospitalization (17,18).

Other complications identified include multiple complications (1.46%) and ophthalmic complications (0.86%), such as diabetic retinopathy. The latter, although reported at a lower prevalence in this dataset, remains one of the leading causes of vision loss globally. Its lower rate may be due to limited screening access or insufficient documentation rather than actual low incidence (19,20).

Collectively, these findings reinforce the critical need for comprehensive diabetes management strategies that go beyond glycemic control to include routine complication screening and timely intervention. Early detection of peripheral and neurological complications, in particular, should be prioritized in clinical practice. Multidisciplinary approaches involving endocrinologists, ophthalmologists, podiatrists, and diabetes educators can be instrumental in reducing the long-term burden of complications and improving patient outcomes.

Health Promotion Strategies

The findings of this study revealed that the majority of Type 2 Diabetes Mellitus (T2DM) patients at Sanden Public Health Centre were female (65%) and elderly (≥60 years, 53.99%). These characteristics are critical considerations for the design of effective and sustainable health promotion strategies.

Health promotion efforts should address the potential limitations in health literacy, particularly among older adults and those with lower educational attainment. The use of visual aids, audio materials, and simple verbal communication has been shown to improve patient understanding and engagement in chronic disease management (21). Community-based forums such as Posyandu Lansia, Posbindu PTM, and women's groups (PKK) can serve as effective platforms for consistent health education interventions (22).

Given the high proportion of T2DM cases (87.72%), there is a clear need to promote

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healthy lifestyle practices focusing on obesity prevention, increased physical activity, and balanced nutrition. National campaigns like "CERDIK" provide a comprehensive framework for delivering these messages in culturally appropriate ways (3). Activities such as elderly exercise groups, walking clubs, and routine nutrition counseling can also be integrated into the Prolanis (Chronic Disease Management Program) at primary care facilities (23).

Moreover, the presence of complications such as neurological, ophthalmic, and peripheral circulatory issues underscores the importance of early detection education. Information on diabetic foot care, signs of neuropathy, and the need for regular eye check-ups has been proven to reduce the long-term burden of complications (24,25).

Involving community health workers, local leaders, and patients' families is essential for enhancing social support and ensuring program continuity. Community-based, participatory strategies have demonstrated effectiveness in health promotion, especially in populations with lower socioeconomic status (WHO, 2022; Rifkin, 2014). With culturally sensitive, locally adapted approaches, interventions are more likely to be accepted and impactful in controlling diabetes.

CONCLUSION

This study described the demographic and clinical characteristics of Type 2 Diabetes Mellitus (T2DM) patients registered at the Sanden Primary Health Center from 2022 to 2024. The majority of patients were elderly women with low educational attainment and predominantly worked as housewives, reflecting the influence of social determinants on disease burden. Type 2 DM represented the vast majority of cases (87.72%), while complications such as peripheral circulatory and neurological disorders were also reported.

These findings highlight the need for focused attention on vulnerable population groups in diabetes care. Understanding the patient profile is crucial to tailoring appropriate screening, management, and follow-up systems in primary health care settings. The results also provide essential baseline data to inform further studies or program evaluations related to chronic disease management in similar contexts.

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